THE EPIDEMIOLOGY of CHRONIC HEPATITIS-B-VIRUS INFECTION in BABYLON PROVINCE

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Abstract:

This study was done to illustrate the epidemiology of chronic hepatitis B viral (HBV) infection in Babylon district. Seventy patients with chronic hepatitis B viral infection were enrolled in this study which lasted from November (2007) to May (2008), and consists of (57 males) and (13 females) with a mean age of (31.5±7.8 years). The study found out that the patients with the age group between (25-35 years) were more affected than others. Males were more affected than females at a ratio of (4:1) and the married ware more frequent than singles (3:1). Also this study revealed that the chronic HBV was more incidence in low economic status peoples and with low educational level. Chronic HBV was more frequent in urban areas than rural areas at a ratio of (2:1), also the prevalence of it was more in smokers than in non smokers (2:1). In addition to that, it was more in non alcoholic than alcoholic patients and no history of drugs addiction was registered. The prevalence of chronic HBV was more common in subjects with a positive family history for HBV (46:70, 65.7%) than subjects with negative family history (24:70, 34.3%). This study were done in Marjan Teaching Hospital, and AL-Hilla Teaching Hospital.

دراسة وبائيه حول التهاب الكبد الفيروسي نوع "ب" المزمن في محافظة بابل

الخلاصة:
أعدت هذه الدراسة لتوضيح بعض المتغيرات الوبائية لالتهاب الكبد الفيروسي نوع "ب" المزمن في محافظة بابل.
لقد شملت هذه الدراسة سبعين مريضا مصاب بالتهاب الكبد الفيروسي نوع "ب" المزمن والتي استمرت من تشرين الثاني 2007 ولغاية أيار 2008 المكونين من(57 من الذكور) و(13 من الإناث) وكان متوسط أعمارهم (31,5 سنة) . وقد تبين من هذه الدراسة إن الأشخاص الذين يتراوح أعمارهم بين (25-35 سنة) أكثر عرضة لظهور المرض. وكان الذكور أكثر إصابة من الإناث بنسبة 4الى 1 والمتزوجون أكثر من الغير متزوجين. وتبين إن هذا المرض أكثر انتشارا عند الأشخاص ذوي الحالة المعيشية والمستوى العلمي المتدنيين وان الإصابة أكثر بالمدن من القرى والمدخنين أكثر من الغير مدخنين. وأظهرت هذه الدراسة إن الإصابة أكثر عند الأشخاص الذين لا يتعاطون الخمر والغير مدمنين على المخدرات وعند الأشخاص الذين لديهم تاريخ عائلي للمرض.
لقد أجريت الدراسة في مستشفى مرجان التعليمي ومستشفى الحلة التعليمي .

Introduction and Review of Literatures:

Background:

Hepatitis B virus (HBV) infection is a significant public health problem that may lead to acute and chronic liver disease, cirrhosis, and hepatocellular carcinoma (HCC) (Atkinson, *et al*., 2000). Hepatitis B is a viral disease with a high incidence and prevalence worldwide and it can cause acute and chronic liver disease (Tsuyoshi and Nagayama, 2004). Approximately (8%) of the world's population has been infected with HBV, and about (350 million, 5–6%) are persistent carriers of HBV (Inlin, *et al*., 2005). The role of host genetic factors and their interactions with environmental factors lead to chronic HBV infection and its complications are not well understood. The clinical presentation ranges from subclinical to symptomatic and, in rare instances, fulminant hepatitis (Parveen and Michael, 2006). Perinatal or childhood infection is associated with few or no symptoms, but it has a high risk of becoming chronic. There are limited number of medications that can be used to effectively treat chronic hepatitis B; a safe and effective vaccine is available to prevent hepatitis B infection (Alexander and Kourtis, 2007).

Epidemiology of chronic HBV:

Age at the time of initial HBV infection is the major determinant of chronicity (Beasley and Hwang, 1991). (David and Daniel, 2003) found that as many as 90% of infected neonates become carriers, the carrier rate falls with increasing age at the time of infection, so that only 3% to 5% of newly infected adults fail to clear HBsAg, and the important risk factor for chronicity is the presence of intrinsic or iatrogenic immunosuppression, also a gender is a well-established but poorly understood, determinant of chronicity; women are more likely than men to clear HBsAg. Hepatitis B spread predominantly parenterally, through intimate personal contact, and perinatally, so individuals at risk are intravenous drug users, children of mothers with HBV infection, homosexuality, patients on hemodialysis, medical staff and those exposed to

blood or blood products (Sam, *et al*., 2008). Approximately 5% of the world's populations are carriers of HBV; it is endemic in many areas of the world, such as Asia, and Africa as well as in certain populations in Australia, New Zealand, South America, the Middle East and the Arctic (Lee, 1997). An estimated 1.25 million people in the US are positive for hepatitis B surface antigen. fifteen percent to forty percent of these carriers may develop hepatitis B-related sequelae in there life times (Lok and Mcmahon, 2004). (Kursad, *et al*., 2005) found in their study in Turkey, that the mean ages of chronic HBV and cirrhotic HBV patients were 31± 9 years in carriers, chronic hepatitis and cirrhotic patients; however, chronic HBV infection was 2.2 times, 2.9 times and 2.75 times more frequent in males than in females in carriers, chronic hepatitis and cirrhotic patients, respectively. Other studies revealed that the people who have lower educational and socioeconomical level and less hygienic living conditions are more susceptible to chronic HBV than the other, although chronic HBV infection was three times more frequent in males than in females (Mistik and Balik, 2001). A study in Japan showed the prevalence of HBV is higher in lower socioeconomic state and the men predominate more than the women (Dennis, *et al*.,2005). Intrafamilial transmission rate of HBV infection has been reported as 25% in Eastern and Southeastern Anatolia (Degertekin, 2001). HBV vaccination in the childhood period, hygienic living conditions and improved socioeconomical and educational status are the cornerstones in the prevention of liver morbidity and mortality in Eastern Turkey (Kursad, *et al*., 2005)**.**

The aim of this study:

Chronic HBV is associated with many anatomical, epidemiological, physiological, biochemical and immunological changes. Owing to the fact that insufficient informations concerning the effect of these factors on Iraqi patients are available, this study was carried out to provide insight to this question and to know some epidemiological, changes in Iraqi patients. Such information is of no doubt necessary as a background for any programs devised in the future for studying chronic HBV, and treating this disease.

Materials and Methods:

Seventy patients were included in this study which lasted from November (2007) to May (2008), and consisted of (57 males) and (13 females). The mean age of those patients was (31.5±7.8 years). Those patients were attended to the gastroenterology center in the Marjan teaching hospital and diagnosed by specialist doctors as chronic hepatitis B infection.

The epidemiological distribution of those patients was as the following: The residency (49 urban and 21 rural area), marital status (51 married and 19 single), economic status (14 good, 16 medium and 40 low level), educational level (9 high education levels and 61 low educational levels), history of smoking (44 with positive history and 26 with negative history), alcohol intake (60 not alcoholic while 10 alcoholic) and all patients included in this study have no history of drugs addiction.

Statistical analysis:

The data were analyzed by using of SPSS program and taking p <0.05 as the lowest limit of significance. Student's t-test was used to examine the differences between different groups. Both t-test, chi square and ANOVA test were applied to determine the differences between one group and another, and between all groups and within group (Wayne, 1999)..

The Results

1. **The age distribution:**

   The patients were divided into three age groups: first age group < 25 years of age with mean age (19±5.2 years), second age group was between 25-35 years of age with a mean of (30.7±4.14) and the third age group > 35 years old with a mean of (45.9 ±5.3) and found 9 patients were in (group-1), 41 were in (group-2) and 20 were in (group-3) i.e. the age group between 25-35 years old had more incidence than other groups and the result was statistically significant (P < 0.05).

2. **The gender influence:**

   In this study the males were more affected with chronic HBV than females, the ratio of males to females about (4:1) respectively. Statistical analysis give significant differences (P < 0.05).

3. **The marital status:**

In those patients enrolled in this study a marries are more frequent than a singles, the ratio about (3:1) respectively. There are statistically significant ($P < 0.05$).

4. **The economic status:**

This study revealed that the chronic HBV was more incident in low economic status group than other groups, and the ratio of good, medium, and low economic status were (1:1:3) respectively. Also there were significant differences between these groups ($P < 0.05$).

5. **Residency:**

The incidence of chronic HBV was significantly ($P < 0.05$) more frequent in urban areas than in the rural areas and the ratio was (2:1) respectively.

6. **Educational levels:**

This study revealed that the patients with low education were significantly ($P < 0.05$) more affected with chronic HBV than other, and the ratio of high educational level to low educational level was (1:6) respectively.

7. **History of smoking:**

The prevalence of chronic HBV in this study was significantly ($P < 0.05$) more in smokers than in non smokers patients with a ratio of (2:1).

8. **Alcohol intake:**

Also the prevalence of chronic HBV in this study was significantly ($P < 0.05$) more in nonalcoholic than in alcoholic patients with a ratio of (6:1).

9. **Drugs addiction:**

No history of drugs addiction to any patients enrolled in this study was registered. The results from (1-8) illustrated in the (table 1).

Table (1): Distribution of patients by (mean age, gender, residency, and marital status, economical status, educational level, history of smoking, and alcohol intake).

		Cases
Mean age ±SD		31.5 ± 7.8
Gender	Male	57
	Female	13
Residency	Rural	21
	Urban	49
Marital status	Married	51
	Single	19
Economical status	Good	14
	Medium	16
	Low	40
Educational level	High	9
	Low	61
History of smoking	Smoker	44
	Non smoker	26
Alcohol intake	Drinker	10
	Non drinker	60

Significant differences within groups for all the above ($P < 0.05$).

10. Family history of HBV:

After taken a careful family history for HBV from patients and control subjects it was found that the prevalence of chronic HBV more common in subjects with positive family history for HBV (65.7%) than in the subjects with negative family history (34.3%), in comparison with control group only (4:30, 13%) with positive family history, while the majority (26:30, 87%) with negative family

history for HBV. There are a significant difference between patients and control group ($P < 0.05$). (Table 2).

Table (2): Distribution of patients and control group by (family history for HBV).

Family history for HBV		**+ve**	**⁻ve**	**Total**
Groups	patients	46	24	70
	Control	4	26	30
Total		50	50	100

Significant differences between patients and control group ($P < 0.05$).

Discussion:

1. **The age distribution:**

The patients enrolled in this study were divided in to three age groups: first group with age less than 25 years old with a mean of (19±5.2), second age group between 25-35 years old with a mean of (30.7±4.14) and third age group more than 35 years old with a mean of (45.9 ±5.3). 9 patients were in group 1, 41 were in group 2 and 20 were in group 3. That means the first presentation of patients with chronic HBV was in age group between 25-35 years with a mean of 31. This study agree with other study results that revealed that the time of initial presentation with chronic hepatitis B ranges was between 24-36 years a mean of 31 years (Yuen, *et al*., 2001). In addition, the results of present study were similar to those done in Turkey by (Kursad, *et al.*, 2005) who found that the mean age of chronic HBV patients were 31± 9 years. The age of infection is mainly at birth time by the vertical transmission (from mother to baby), but the time of presentation between 25 to 35 years old is because the patients are asymptomatic and discovered accidentally by routine investigation during blood donation, married or employment and all of them at this age group.

2. **The gender influence:**

In this study the males to females ratio was about 4:1. Meaning that the males are more affected with chronic HBV than females. The study under discussion agrees with other study that has revealed the males to females ratio ranging from (4.9:1.5) (Yuen, *et al*., 2001). It is also similar to other study that illustrated that the chronic HBV infection was 2.9 times more frequent in males than in females (Kursad, *et al.*, 2005). (Mistik and Balik, 2001) found the chronic HBV infection was three times more frequent in males than in females. Also (Dennis, *et al*., 2005) and (Alexander, *et al*., 2007) found that men predominate women in all populations of HBsAg carriers. The gender is well established but poorly understood, determinant of chronicity; however women are more likely than men to clear HBsAg (David and Daniel, 2003).

3. **The economic status:**

This study revealed that, the chronic HBV is more frequent in low economic status than the other groups enrolled in this study. The ratio of good, medium, and low economic status was about (1:1:3) respectively. The present study agrees with other study done by (Mistik, *et al.*, 2001) who found a lower socioeconomical level and less hygienic living conditions are more susceptible to chronic HBV than the others. Also it is similar to results of other study was done in Japan by (Dennis, *et al.*, 2005) who showed that the prevalence of HBV is higher in lower socioeconomic state. Chronic HBV infection begins when the immune response that normally clears the infection fails to take place or is too weak to be effective; thus, infections are more common in low immunity subjects as a result of poverty (Hoofnagle, *et al*., 1997).

4. **Residency:**

The incidence of chronic HBV is more frequent in urban areas than in the rural areas with a ratio of (2:1) respectively, and by statistical analysis there are significant ($P < 0.05$). This finding is may be, due to the health education in the urban is better than in rural areas, which leads to early discovery of this disease.

5. **Educational levels:**

This study found that, the subjects with low educational level are more affected than those with higher educational level at ratio of (6:1) respectively. The present study agrees with other study that revealed the people who have lower educational level were

more affected than the higher educational level (Mistik, *et al.*, 2001). The results of this study under discussion agree with the results obtained by other study was done in Turkey by (Kursad, *et al.*, 2005), who they found that the incidence of HBV infection is more common in low educational level than the other, and improvement of socioeconomical and educational status are the cornerstones in the prevention of liver morbidity and mortality in Eastern Turkey. The mode of transmission is mainly by (homosexual and drugs abuse), and both of them are behaviors of low educational level and that explain, why the HBV is more common in this community groups .

6. **History of smoking:**

The prevalence of chronic HBV in this study is more in smokers than in non smokers patients with a ratio of (about 2:1)**.** This study is in agreement with other study who found that the incidence of chronic HBV is more in smokers than nonsmokers, because smoking alter the immune system (Dennis, *et al.*, 2005).

7. **Alcohol intake and drugs addiction:**

The prevalence of chronic HBV in this study is significantly ($P < 0.05$) more in non alcoholic than the alcoholic patients with a ratio of (about 6:1). Also there are no history of drugs addiction to any patients enrolled in this study, and this finding disagrees with (Alexander, *et al*., 2007), and (Beasley, *et al.*,1983) who illustrated that the prevalence of type B hepatitis increased among drinkers and drug addicts. (Harpaz, *et al*., 1996) mentioned that, the risk of progression to chronic liver disease depends on the source of infection and in drugs addiction the risk of chronic infection is 10%. No explanation to this deference, but may be due to the patients denied of alcohol intake and drugs addiction.

8. **Family history of HBV:**

A careful family history for HBV from patients and control subjects was taken, it was found that the prevalence of chronic HBV more common in subjects with positive family history for HBV (46:70, 65.7%) than in the subjects with negative family history (24:70, 34.3%), in comparison with control group only (4:30, 13%) with positive family history, while the majority with negative family history for HBV (26:30, 87%). This study correlates with the results of (Degertekin, 2001) who reported that intrafamilial

transmission rate of HBV infection has been reported as 65% in Eastern and Southeastern Anatolia. (Vinay, *et al*., 2005) revealed that, in endemic regions such as Africa and Asia, spread from an infected mother to a neonate during birth (vertical transmission) is common, and these neonatal infection often leads to the carrier state for life and this may explain why more than one member in the same family have a chronic HBV.

Conclusions:

The age, gender, residency, economical state, educational level, history of (smoking, alcohol intake and drugs addiction); and family history for HBV infection play an important role in the development of chronic HBV infection.

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